

Computer Bits

COMPUTERS TO AID HANDICAPPED

By Leslie Solomon

LAST MARCH, we attended the second annual West Coast Computer Faire and heard eight papers discussing different ways computer enthusiasts can help handicapped people.

This is ample evidence that making home computers to aid the handicapped is an excellent project for computer clubs. It would certainly be more gratifying than Star Trek or creating more computer games. And modestly priced equipment—voice interfaces, modems, controllers, etc.—for this purpose is at hand. If you would like to contribute your talents to this much-needed computer-to-human interfacing, contact Computers for the Handicapped, c/o Warren Dunning, 5939 Woodbine Ave., Phila-

delphia, PA 19131. You will find it challenging and exciting.

PET Doings. The PET computer, like many of its predecessors is starting to spawn a "cottage industry" of bus plug-in devices.

HUH Electronic Music Productions, BOX 259, Fairfax, CA 94930 (Tel: 415-457-7598), is now making several PET add-ons. Among these is the PET-100, that allows the PET to use conventional S-100 boards. This approach uses a cable-connected board that plugs into an S-100 motherboard (that also has a power supply), with the other end of the cable connected to the PET expansion connector. Two versions

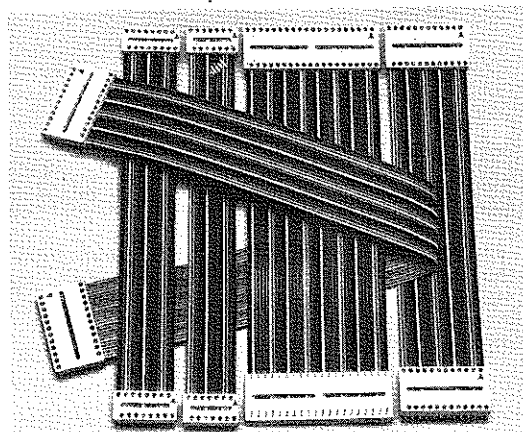
are available: mode-1 emulates most S-100 functions except RDY so it has fast memory and no wait states; and mode-2 allows read and write wait states. Kit is \$199.95, assembled it is \$279.95

Another add-on is PETSQUEAK (\$19.95) which automatically "beeps" when a file header is found or written, and when a program is loaded or saved. It may also be used as a beeper under program control. PET-TUNE-YA (\$29.95) is an 8-bit D/A converter that can be used as a music generator or as a DAC for graphics or control. The PET Video Buffer (\$19.95) is a video combiner that allows the use of conventional large-screen video monitors for classroom display.

S-100 Bus Things. It seems like almost every day something new comes along for the ubiquitous S-100 bus, and here is one more:

Objective Design Inc., POB 20325, Tallahassee, FL 32304 (Tel: 904-224-5545), has released its Programmable Character Generator board for \$149.95 kit and \$195 assembled/tested. This S-100 plug-in works with any of the

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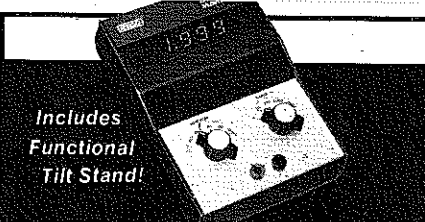
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Motorola 9x7 matrix character generators such as used in the VDM-1, SOL, Poly VTI, SSM Video Board, etc. To use this new board, the character generator ROM is removed from the existing system, and plugged into a socket on the PCG. The PCG, in turn, is plugged into the now-empty character generator socket. Under software control, data in the 2K of RAM on the PCG can replace some or all of the characters in the old ROM. Such features as APL characters, special math or scientific symbols, foreign alphabets, italics, or other forms of emphasis, or even music symbols can be created. Programmable characters may be used to create graphics up to 512 x 256. The PCG achieves its high resolution without external memory or DMA activity.

Breadboarding. Probably the best way to try out a new circuit is to breadboard it, preferably using solderless sockets. This way, you can try all sorts of hardware "tricks" without causing any heat damage. In line with this, AP Products Inc., Box 110, 72 Corwin Drive, Painesville, OH 44077 (Tel: 216-354-2102), has released three POWER-ACE Circuit Evaluators said to have twice the component capacity of other solderless breadboards. All three models offer 256 x 5 tie-point terminals, and 16 x 25 tie-point busses, fused power supply, and a ground plane.

POWERACE 101 (\$84.95) features a 5-to-15-volt, 600-mA dc supply having excellent characteristics, and a 5%, 0-15-volt meter. POWERACE 102 (\$114.95) has a fixed 5-volt, 1-ampere supply, four slide switches with logic-0 or logic-1 outputs, and two debounced momentary switches delivering positive or negative output pulses. In addition, this model also has four LED's, a debounced pushbutton with positive or negative pulse output, and a clock generator from 1 Hz to 100 kHz output. POWERACE 103 (\$124.95) is a beefed-up version of the 102, with the addition of a ±15-volt, 250-mA supply, and a 0-15-volt meter.

EPROM Erasure. There have been many articles on programming EPROM's, but erasure has been left up to the user. One way to erase EPROM's is by using the UVS-11E Low-Cost EPROM Erasing Lamp (\$59.50) from Ultra-Violet Products Inc., 5100 Walnut Grove Ave., San Gabriel, CA 91778 (Tel: 213-285-3123). It is available from many electronics suppliers and comput-



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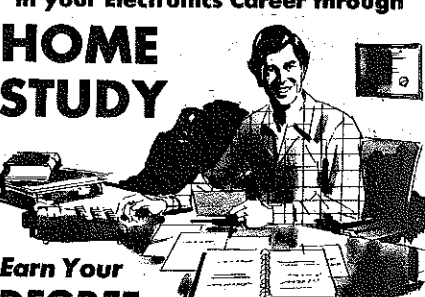
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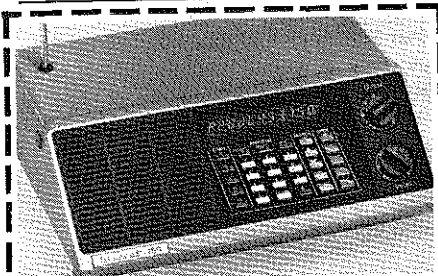
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er stores. The UVS-11E holds up to four chips in a conductive foam base, and supports the chips at 1" from the UV lamp. Up to four chips can be erased in 20 minutes. The holding tray absorbs all UV while transmitting visible light. (The UV lamp will not operate unless seated within the holding tray. When the lamp is lifted from the tray, it goes off.)

Cabinets. Its one thing to build a new keyboard, a TVT, or a complete system, but locating a decent cabinet is something else.

If packaging has been a problem, contact Custom Electronics Industries, 609 Route 109, West Babylon, NY 11704 (Tel: 516-884-2121). This firm makes a variety of high-impact plastic enclosures for a variety of computer items. Prices range from \$39.95 for a TVT cabinet and up depending on size. Cabinets are available painted or unpainted.

New I/O Port. According to Vector Graphics Inc., 790 Hampshire Rd., A-B, Westlake Village, CA 91361 (Tel: 805-497-6853), its Bit Streamer I/O S-100 board (\$155 kit, \$195 assembled), available through most computer stores, combines two parallel, and one serial I/O port with an 8251 programmable UART. One parallel port can also be used as a keyboard input port. Without changes to the pre-jumpered options, the board can also operate as an RS-232 serial port.

Ham/Computer Terminal. Xitex Corp., POB 20887, Dallas, TX 75220 (Tel: 214-620-2993), is marketing its SCT-100 low-cost S-100 plug-in video terminal. Using the Mostek 3870, the board produces 64 characters and 16 lines of 5x8 dot matrix characters and has a 128-character set including upper and lower case, numerics, Greek, common symbols, and special graphic symbols. The board can use either ASCII (110/300 baud) or baudot (45/72 baud). Full cursor control is provided. Both 20- and 60-mA serial loops are provided, as is RS-232. All loops are opto-isolated.

Having both ASCII and baudot, the board can be used for ham FSK as well as computer applications. Three versions are available: SCT-100A is assembled and tested for \$185; SCT-100K is a kit for \$155; and SCT-100P is a partial kit that includes the 3870, character generator ROM, crystal, pc board, and complete documentation at a price of \$85. The documentation package (SCT-100D) is available for \$3.

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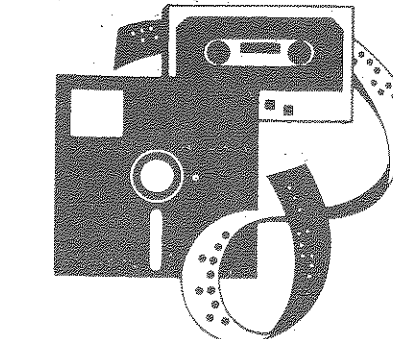
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Software Sources

6800 High-Speed Cassette Save/Load Program. Designed for the SWTPC M68 computer and AC-30 cassette interface, WHIZ can save and load programs at 9X MIKBUG speed, or 3X binary-format

speed, using ordinary cassette recorders. The program has a built-in relocater, and allows the user to specify the start, end and program-start addresses for a dump. When loading, WHIZ will produce an "OK" message and display the last address referenced on tape and the PC start address. Other hardware requirements include a terminal with control-character decoding. WHIZ resides in about 1k, and is supplied on KC cassette with origin 1000h, for \$15.95, or on Smoke Signal Broadcasting BFD-68-format diskette for \$20.95. Write: Shifting Sands Microcomputer Products Corp., Box 441, Fairborn, OH 45324.

Micro "APL" for 8080. 8k EMPL is a micro APL for 8080 based computers, using ASCII-character adaptations of the APL symbols and operators. EMPL has numeric and character vectors (one-dimensional arrays), user-defined functions, 22 primitive functions, 9 system commands, and many other special operators and characters. Typical operators

and commands include: logical and arithmetic functions, catenation, string, literal-text, branch, absolute, random, and many others. The program itself resides in the first 5.6k bytes of memory, but requires a minimum of 8k total RAM. Double-precision integer arithmetic, with a range of ±32767 is used. EMPL is available on Tarbell cassette for \$10 (NJ residents add 5% tax), including user's manual, from Erik T. Mueller, Britten House, Roosevelt, NJ 08555; and from Tarbell Electronics, 20620 S. Leapwood Ave., Suite P, Carson, CA 90746, for \$15 (California residents add 6% tax). Also available for \$20 on paper tape, North Star disk, CUTS cassette or MITS cassette from supplier.

6800 Math Package. A math package with 12-digit accuracy up to the value 549,755,813,887, and with 11-digit accuracy for higher values, is available for the SWTPC 6800 computer. Calculations are floating-point, with 5-byte mantissas plus 1-byte exponent, a 25% saving in storage over BASIC, with higher accuracy. The package also supports Fortran-type formatting of floating-point and integer specifications in both read and write. The package includes binary-to-ASCII conversion routines. Updates will be sent to all original purchasers for the cost of postage and disk or tape. If the customer supplies his own disk or tape, the charge will be \$1.00. Cost of the math package is \$107.50 in Smoke Signal Broadcasting disk, or \$103.00 on KC-standard, 300-baud cassette. Write: AAA Chicago Computer Center, 3007½ W. Waveland Ave., Chicago, IL 60618, or participating dealers.

6502 Resident Assembler and Editor. The ASM65 resident assembler and Mini-Editor for 6502 systems are designed to work together, and can produce object paper tapes as well as listings. Both are available in KIM or TIM format; addressing for the ASM65 is 1000-1FA6 (TIM) or 2000-2FBD (KIM); for the mini-editor it's 2600-297F and 3600-3997F for the TIM and KIM versions respectively. The ASM65 on hex dump or paper tape is \$13; the manual is \$5, and a cross-assembly listing is \$28. Prices for the Mini-Editor are \$4.00 for the hex dump or binary paper tape, \$2.50 for the manual, and \$7.50 for the listing. All prices are post-paid, first class. A catalog of other programs is \$1.00. Write: The 6502 Program Exchange, 2920 Moana, Reno, NV 89509.

8080 Multitasking Scheduler. MTS/80 is a real-time multitasking scheduler for Intel SBC 80/10 single-board computers. It features relocatable binary libraries, including I/O drivers and system utilities; source code, and manuals. On MDS-800-compatible floppy discs, MTS/80 is \$995. If purchased separately, the user's manual is \$25, and the System Generation Procedure and I/O Driver Implementation Manuals are \$10 each. Write: Resource Control, 2701 152nd Ave. NE, Redmond, WA 98052.

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